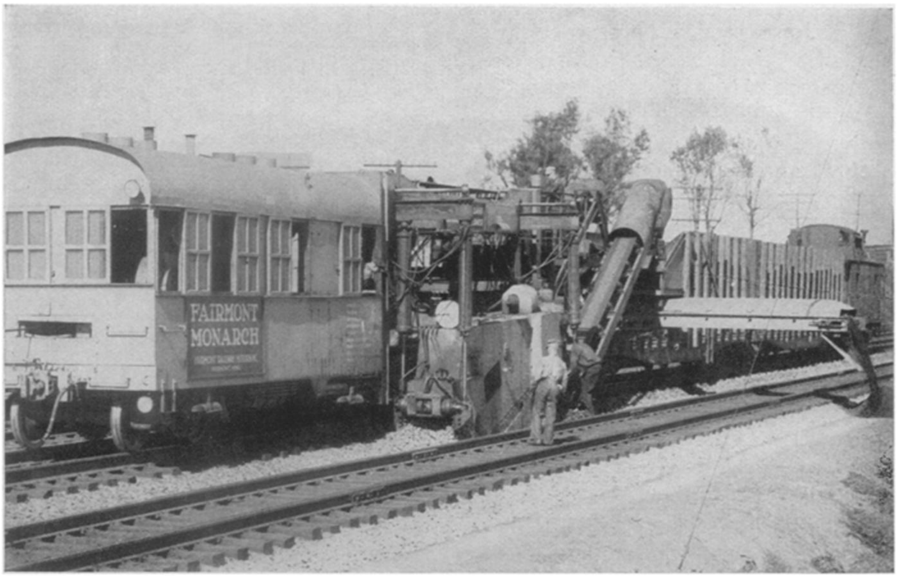

RAILROAD LAUNDRY: DAILY CAPACITY 650 TONS OF STONES

ASTRONOMY

Earth-Like Life Possible On Venus and Mars Only

LIFE is more likely to exist on Venus than on Mars, if it is to be found on any planet besides the earth. Life in anything like the form we know it would be quite impossible on any but the three planets mentioned. These inferences may be drawn from facts presented by Dr. Walter S. Adams of the Mt. Wilson Observatory, in a lecture before the Carnegie Institution of Washington.

Life as a physical thing is first of all conditioned by the atmosphere, and to support life a planet must have a friendly atmosphere. Mercury, the little planet nearest the sun, apparently has no atmosphere at all: it was too little to hold one by the attraction of gravity. Besides, on its sunward side Mercury is terrifically hot—hot enough to melt lead.

At the other extreme are the huge outer planets, Jupiter, Saturn, Neptune and Pluto. The larger of these have very thick atmospheres, perhaps thousands of miles deep, held by the attraction of their great mass. But they are so far from the sun that they are perpetually cold, far too cold for the support of life.

Mars has an atmosphere, but because the mass of the planet is only about one-tenth that of the earth, this atmosphere is thin and meager. Few clouds are ever seen in it, though the existence of what seem to be polar snow caps would hint at the presence of some water. No free oxygen, indispensable to life, has ever been detected on Mars by spectrographic studies. Finally, the thinness of the atmosphere can do little to mitigate the contrast between the heat of Martian noon and the freezing cold of Martian midnight. So if life exists there it must be of the most primitive and toughest type—possibly like the lichens of the earth.

Venus, blanketed in perpetual veils of clouds, may have oxygen below their level, though again the spectrographs have never proved its existence there. But with abundant water, and a rich atmosphere to modify the ardor of the sun, life may be possible on Venus.

The atmospheres of the planets are studied by analyzing the sunlight reflected from them with a spectrograph, and identifying the dark "absorption bands" characteristic of each element and chemical compound. Thus, such strange gases as methane and ammonia have been found in the atmospheres of the larger planets. Planetary temperatures are measured by focusing light from different parts of their surfaces, or from their entire areas, on extremely delicate electrical devices known as thermocouples.

Science News Letter, December 16, 1933

ENGINEERING

Five Miles of Roadbed Is Machine's Daily Wash

FOR ORDINARY folks one wash day a week may be enough, but on the railroad every day is wash day, especially during the summer and fall. The laundry work is done on a gigantic scale, with tons of stone passing through the washers instead of the linens and laces of the family.

On the railroad almost the whole ballasted roadbed is taken up periodically by gigantic machines, thoroughly cleaned and put down again with mechanical precision. This regular cleaning of the ballast gives resilience and strength to the track, eliminates objectionable dust and dirt on the trains, improves the riding qualities and adds to safety.

The Pennsylvania Railroad has been trying out an entirely new and improved type of mechanical ballast cleaner. The new machine, illustrated on this page, has a capacity for cleaning 650 tons of stone ballast an hour, enough to fill eleven large steel hopper cars. Five miles of single track can be cleaned in one working day, both sides being cleaned at the same time.

The main unit is a massive machine 65 feet long. The cleaning apparatus proper consists of two rectangular steel boxes, one on each side of the machine, which, when in operation, are swung out beside the track.

Science News Letter, December 16, 1933

ZOOLOGY

European Snail Species Introduced into Australia

SNAILS of the common European species known as dune snails have found their way into Western Australia, presumably by accidental introduction on the bodies of imported farm animals or in their fodder. Though relatively harmless in Europe, the snails are reported to be making themselves troublesome in Australian gardens, and may prove to be another of the introduced pests, like the European rabbit and the American prickly-pear cactus, from which the southern continent has had to suffer.

The introduction of the dune snail into its new habitat is reported to *Nature* by Guy C. Robson of the British Museum.

Science News Letter, December 16, 1933